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east-and-west direction. This umbra was in three distinct parts at 11:30 A.M. on May 28th, and the entire formation seemed to be still diminishing.

The general outlines seemed unchanged at 1 P.M. May 29th, but the division in the larger umbra was undiscernible, perhaps on account of the foreshortened view and the solar atmosphere. On May 30th the outlines were still visible near the limbs, but on the 31st it had passed from view. At the present stage of sun-spot minimum the details of a group of more than average size have especial interest, as the known irregularities of the cycle make it possible that they may be the initial footprints of a returning maximum.

SAN FRANCISCO, May 31, 1901.

FLUCTUATIONS OF *NOVA PERSEI.*

BY ROSE O'HALLORAN.

Nova Persei was observed on about fifty clear evenings between 7:30 and 9:00, P. S. T., commencing on February 24th, and ending in the beginning of May. During this period its decline from 1st magnitude to 6.5 was interrupted by nine temporary revivals of light, which were estimated as follows, with the aid of the charts published by Father HAGEN:—

Between February 28th and March 2d, from 2.1 to 1.9 mag.
Between March 11th and 12th, from 3.3 to 3.1 mag.
Between March 20th and 27th one or two fluctuations were noticed, but not having been recorded at the time of observation, the amount of increase or the dates could not be recalled accurately.
Between April 7th and 8th, from 5.2 to 4.6 mag.
Between April 10th and 12th, from 5.4 to 4.6 mag.
Between April 16th and 18th, from 5.6 to 4.2 mag.
Between April 22d and 23d, from 6.5 to 4.0 mag.
Between April 26th and 27th, from 6.0 to 4.5 mag.
Between April 27th and May 6th, from 6.0 to 4.0 mag.

This last estimate of increase was unsatisfactory on account of the interference of high buildings, which hindered further observation afterwards. The intervals in which fluctuations occurred sometimes included cloudy days, so that the dates of increase are those on which the change was first detected at its highest stage. The greatest decline of the *Nova* was to 6.5 magnitude, on the 22d of April.

SAN FRANCISCO, May 31, 1901.

COMET HOLK.

BY EDGAR L. LARKIN.

The Australian comet, discovered by HOLK, April 23d, was well observed at the Mount Lowe Observatory to-night, May 17, 1901, at $7^h\ 38^m$. Its approximate position then was:—

$$\alpha\ \ 5^h\ 50^m\ 30^s$$
$$\delta\ +4^\circ\ 46'$$

The nucleus was small, but bright and distinct in the brilliant twilight, and had the appearance, nearly as could be judged, of a 4th-magnitude, orange-colored star. The tail was about five minutes in length and quite wide. A fog has rested upon the summits of Tujunga and Verdugo Mountains for six days. These ranges constitute the western horizon here, and the comet could not have been seen before. Professor KREUTZ'S ephemeris was used. The visitor was seen at $7^h\ 38^m$, and disappeared behind the peaks at $8^h\ 13^m$, thus affording only thirty-five minutes for observation. The tail was so faint that it could not be seen in the high power of the micrometer, so it was not measured,— the apparent length being an estimate with low power, 132 Gundlach periscopic. No attempt was made to secure a spectrum, owing to the short time available, and it is doubtful if a spectrum could have been seen in the twilight glow, and still more a subject of doubt whether it would possess value if obtained, owing to vapors round about the mountain tops.

The comet's motion was rapid and could be easily seen in the short time the display was on. There were no catalogue-stars in field. If the comet had been at high altitude, it is probable that the tail would have been as much as one degree in length. The celestial wanderer was almost invisible in the finder, but the nucleus was clearly seen in the 16-inch, while the tail was brighter than thought possible in the glimmer of solar rays and the glow